



Testimony

Before the Subcommittee on Oversight of
Government Management, the Federal Workforce
and the District of Columbia, Committee on
Governmental Affairs, U.S. Senate

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GREAT LAKES

A Coordinated Strategic Plan and Monitoring System Are Needed to Achieve Restoration Goals

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Natural Resources and Environment



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Highlights

Highlights of [GAO-03-999T](#), a report to the Subcommittee on Oversight of Government Management, the Federal Workforce and the District of Columbia, Senate Committee on Governmental Affairs

Why GAO Did This Study

The five Great Lakes, which comprise the largest system of freshwater in the world, are threatened on many environmental fronts. To address the extent of progress made in restoring the Great Lakes Basin, which includes the lakes and surrounding area, GAO (1) identified the federal and state environmental programs operating in the basin and the funding devoted to them, (2) evaluated the restoration strategies used and how they are coordinated, and (3) assessed overall environmental progress made in the basin restoration effort.

What GAO Recommends

GAO recommended in its April 2003 report that the Administrator, Environmental Protection Agency (EPA)

- ensure that the Great Lakes National Program Office fulfills its coordination responsibilities and develop an overarching Great Lakes strategy; and
- develop environmental indicators and a monitoring system for the Great Lakes Basin that can be used to measure overall restoration progress.

EPA generally agreed with GAO's conclusions that better planning, coordination, monitoring and the development of indicators are needed, and stated it would provide the Congress, GAO, and the Office of Management and Budget with a formal response to the report recommendations at a later date.

www.gao.gov/cgi-bin/getrpt?GAO-03-999T.

To view the full report, including the scope and methodology, click on the link above. For more information, contact John Stephenson at (202) 512-3841 or John Wanska at (312) 220-7628.

GREAT LAKES

A Coordinated Strategic Plan and Monitoring System Are Needed to Achieve Restoration Goals

What GAO Found

There are 148 federal and 51 state programs funding environmental restoration activities in the Great Lakes Basin. Most of these programs are nationwide or statewide programs that do not specifically focus on the Great Lakes. However, several programs specifically address environmental conditions in the Great Lakes. GAO identified 33 federal Great Lakes specific programs, and states funded 17 additional unique Great Lakes specific programs. Although Great Lakes funding is not routinely tracked for many of these programs, we identified a total of about \$3.7 billion in basin-specific projects for fiscal years 1992 through 2001.

GAO identified several Great Lakes environmental strategies being used at the binational, federal, and state levels. These strategies are not coordinated or unified in a fashion comparable to other large restoration projects, such as the South Florida ecosystem. Without an overarching plan for these strategies, it is difficult to determine overall progress. The Water Quality Act of 1987 charged EPA's Great Lakes National Program Office with the responsibility for coordinating federal actions for improving the Great Lakes' water quality, however, it has not fully exercised this authority to this point.

With available information, it is not possible to comprehensively assess restoration progress in the Great Lakes. Current indicators rely on limited quantitative data and subjective judgments to determine whether conditions are improving, such as whether fish are safe to eat. The ultimate success of an ongoing binational effort to develop a set of overall indicators for the Great Lakes is uncertain because it relies on the resources voluntarily provided by several organizations. Further, no date for completing a final list of indicators has been established.

Great Lakes: Largest Body of Freshwater in the World



Sources: National Oceanic and Atmospheric Administration and GAO.

Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to discuss our work on environmental restoration activities in the Great Lakes Basin. As you know, the Great Lakes represent the largest system of freshwater in the world and a natural resource that is threatened on many environmental fronts. To protect this resource and to address common water quality problems, the United States and Canada entered into the bilateral Great Lakes Water Quality Agreement (GLWQA) in 1972. However, today, more than three decades after the original agreement was signed, beaches are frequently closed to swimmers due to pollution, fish are unsafe for high risk individuals to eat, and raw sewage is still being dumped into the lakes.

Progress has been made on a number of significant fronts, including controlling the nonnative sea lamprey, reducing the water's phosphorus content, and improving fish populations, but much more remains to be accomplished before the overall goals of the agreement can be met. Several recently released reports, including ours, have questioned whether the current environmental activities in the Great Lakes being funded by numerous organizations and various programs have resulted in significant restoration progress in the basin, or even whether they are adequate to fulfill the United States commitments under the agreement. In 2002, we reported that the Environmental Protection Agency (EPA) needed to take action to improve its oversight for cleaning up specifically designated contaminated areas.¹

My testimony today is based on our April 2003 report, which was prepared at the request of 14 members of Congress' Great Lakes Task Force. Specifically, GAO was asked to (1) identify the federal and state environmental programs operating in the Great Lakes Basin and the funding being devoted to them, (2) evaluate how the restoration strategies are used and coordinated, and (3) assess overall environmental progress made in the basin restoration efforts thus far.

In summary, Mr. Chairman, we found the following:

¹See U.S. General Accounting Office, *Great Lakes: EPA Needs to Define Organizational Responsibilities Better for Effective Oversight and Cleanup of Contaminated Areas*, [GAO-02-563](#) (Washington, D.C.: May 17, 2002).

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- There are 148 federal and 51 state programs funding environmental restoration activities in the Great Lakes Basin. Most of these are nationwide or statewide programs that do not specifically focus on the Great Lakes, but do fund projects that help clean up the basin. We could not determine the total Great Lakes specific funding contributions from these programs, because funds are not typically tracked for specific areas such as the basin. However, based on partial information available from 11 federal agencies and 7 of the 8 Great Lakes states, we determined that at least \$1.8 billion in federal funding and \$461.3 million in state funding went to basin-related projects in fiscal years 1992 through 2001. In addition, there were 33 federal programs focused specifically on the Great Lakes Basin, for which about \$387 million was spent in fiscal years 1992 through 2001, and the states funded 17 additional Great Lakes specific programs, for which about \$956 million was expended during the same general time period.
 - The numerous restoration programs operating in the Great Lakes Basin employ a variety of environmental strategies at the binational, federal, and state levels to address specific environmental problems, but there is no overarching plan for coordinating these disparate strategies and program activities into a coherent approach for attaining overall basin restoration goals. Without such a plan for the basin, it is difficult to determine overall progress and ensure that limited resources are being used effectively. Other large-scale ecosystem restoration efforts, such as those for the Chesapeake Bay and the South Florida ecosystem, have demonstrated the importance of having a comprehensive strategic plan with clearly articulated goals, objectives, and criteria for measuring success and a decision-making body for weighing the merits of, and prioritizing funding for, proposed cleanup and restoration projects.
 - The absence of a unified Great Lakes restoration effort stems, in part, from the lack of an effective, authoritative organizational entity for planning, monitoring, and establishing funding priorities. The Clean Water Quality Act of 1987 charged EPA's Great Lakes National Program Office (GLNPO) with the responsibility for coordinating federal actions for improving the Great Lakes' water quality. However, GLNPO has not fully exercised this authority. For example, it has not entered into agreements with other agency organizations regarding their restoration responsibilities, as required by the Clean Water Act.
 - Additionally, the lack of consistent, reliable information and measurement indicators makes it impossible to comprehensively assess restoration progress in the Great Lakes Basin. While the Great Lakes Water Quality Agreement long ago called for the development and implementation of a

monitoring system, this requirement has not yet been met. Furthermore, any effort to develop indicators must rely on limited quantitative data and subjective judgments to determine whether conditions are improving. In 1996, a binational effort was initiated to develop a set of overall indicators for the Great Lakes through a series of biennial conferences, but the ultimate success of this effort, which relies on the volunteer contributions of several organizations, is uncertain at best.

To improve coordination and help ensure that funds are spent effectively, we recommended that the Administrator, Environmental Protection Agency, (1) charge GLNPO with the responsibility for developing an overarching Great Lakes strategy with specific goals and priorities for evaluating and funding alternative projects, (2) submit a proposal to Congress for funding the plan, and (3) develop environmental indicators and a monitoring system that can be used to measure overall restoration progress. EPA generally agreed with our conclusions but stated that it would provide a formal response to our recommendations at a later date.

Background

The Great Lakes Basin is a large area that extends well beyond the five lakes proper to include their watersheds, tributaries, connecting channels, and a portion of the St. Lawrence River. The basin encompasses nearly all of the state of Michigan and parts of Illinois, Indiana, Minnesota, New York, Ohio, Pennsylvania, Wisconsin, and the Canadian province of Ontario. The lakes form the largest freshwater system on earth, accounting for 20 percent of the world's fresh surface water and over 95 percent of the U.S. fresh surface water supply for the contiguous 48 states.

Millions of people in the United States and Canada rely on the five Great Lakes—Superior, Michigan, Erie, Huron, and Ontario—as a principal source of their drinking water, recreation, and economic livelihood. Over time, industrial, agricultural, and residential development on lands adjacent to the lakes has seriously degraded the lakes' water quality, posing threats to human health and the environment, and forcing restrictions on activities such as swimming and fish consumption.

To protect the Great Lakes Basin and to address water quality problems, the governments of the United States and Canada entered into the bilateral Great Lakes Water Quality Agreement in 1972. In the agreement, the United States and Canada agreed to restore and maintain the chemical, physical, and biological integrity of the Great Lakes Basin. A new agreement with the same name was reached in 1978 and amended in 1983 and 1987. The agreement prescribes prevention and cleanup measures to

improve environmental conditions in the Great Lakes. The agreement obligates the International Joint Commission (IJC), an international body, to assist in and report on the implementation of the agreement.

The Clean Water Act directs EPA to lead efforts to meet the goals of the Great Lakes Water Quality Agreement and establishes GLNPO within EPA, charging it with, among other things, cooperating with federal, state, tribal, and international agencies to develop action plans to carry out the responsibilities of the U.S. under the agreement. GLNPO is further responsible for coordinating the agency's actions both in headquarters and in the regions to improve Great Lakes' water quality. In addition to GLNPO, numerous federal, state, binational, and nonprofit organizations conduct activities that focus on improving the overall Great Lakes Basin environment or some specific environmental issue within the basin.

Many Federal and State Programs Fund Restoration Activities in the Great Lakes Basin

About 200 programs—148 federal and 51 state—fund restoration activities within the Great Lakes Basin. Most of these programs, however, involve the localized application of national or state environmental initiatives and do not specifically focus on basin concerns. Officials from 11 federal agencies identified 115 of these broadly scoped federal programs, and officials from seven of the eight Great Lakes states identified 34 similar state programs. EPA administers the majority of the federal programs that provide a broad range of environmental activities involving research, cleanup, restoration, and pollution prevention. For example, EPA's nationwide Superfund program funds cleanup activities at contaminated areas throughout the basin. While these broadly scoped federal and state programs contribute to basin restoration, program officials do not track or try to isolate the portion of funding directed toward specific areas, such as the basin, which makes it difficult to determine their contributions to total Great Lakes spending. However, basin-specific information was available on some of these programs. Specifically, basin-related expenditures for 53 of the 115 broadly scoped federal programs totaled about \$1.8 billion in fiscal years 1992 through 2001. Expenditures for 14 broadly scoped state-funded programs totaled \$461.3 million during approximately the same time period.

Several federal and state programs were specifically designed to focus on environmental conditions across the Great Lakes Basin. Officials from seven federal agencies identified 33 Great Lakes specific programs that had expenditures of \$387 million in fiscal years 1992 through 2001. Most of these programs funded a variety of activities, such as research, cleanup, or pollution prevention. An additional \$358 million was expended for

legislatively directed Corps of Engineers projects in the basin, such as a \$93.8 million project to restore Chicago's shoreline. Officials from seven states reported 17 Great Lakes specific programs that expended about \$956 million in 1992 through 2001, with Michigan's programs accounting for 96 percent of this amount. State programs focused on unique state needs, such as Ohio's program to control shoreline erosion along Lake Erie and Michigan's program to provide bond funding for environmental activities.

Besides federal and state government agencies, other organizations, such as foundations, fund a variety of restoration activities in the Great Lakes Basin by approving grants to nonprofit and other organizations. Other governmental and nongovernmental organizations fund restoration activities. For example, individual municipalities, township governments, counties, and conservation districts are involved in various restoration activities.

The Lack of a Coordinated, Overarching Strategic Plan Has Impeded Restoration Efforts

Restoration of the Great Lakes Basin is a major endeavor involving many environmental programs and organizations. The magnitude of the area comprising the basin and the numerous environmental programs operating within it require the development of one overarching strategy to address and manage the complexities of restoring the basin's environmental health. The Great Lakes region cannot hope to successfully receive support as a national priority without a comprehensive plan for restoring the Great Lakes. In lieu of such a plan, organizations at the binational, federal, and state levels have developed their own strategies for the Great Lakes, which have inadvertently made the coordination of the various programs operating in the basin more challenging.

The Great Lakes Basin needs a comprehensive strategy or plan similar to the plans developed for other large ecosystem restoration efforts, such as those for the South Florida ecosystem and the Chesapeake Bay. In South Florida, federal, state, local and tribal organizations joined forces to participate on a centralized task force formalized in the Water Resource Development Act of 1996. The strategic plan developed for the South Florida ecosystem by the task force made substantial progress in guiding the restoration activities. The plan identifies the resources needed to achieve restoration and assigns accountability for specific actions for the extensive restoration effort, estimated to cost \$14.8 billion. The Chesapeake Bay watershed also has an overarching restoration strategy stemming from a 1983 agreement signed by Maryland, Virginia, and Pennsylvania; the District of Columbia; the Chesapeake Bay Commission;

and EPA. The implementation of this strategy has resulted in improvements in habitat restoration and aquatic life, such as increases in bay grasses and in the shad population.

Several organizations have developed strategies for the basin at the binational, federal, or state levels that address either the entire basin or the specific problems in the Great Lakes. EPA's Great Lakes Strategy 2002, developed by a committee of federal and state officials, is the most recent of these strategies. While this strategy identified restoration objectives and planned actions by various federal and state agencies, it is largely a description of existing program activity relating to basin restoration. State officials told us that the states had already planned the actions described in it, but that these actions were contingent on funding for specific environmental programs. The strategy included a statement that it should not be construed as a commitment for additional funding or resources, and it did not provide a basis for prioritizing activities. In addition, we identified other strategies that addressed particular contaminants, the restoration of individual lakes, or the cleanup of contaminated areas. Ad hoc coordination takes place among federal agencies, states, and other environmental organizations in developing these strategies or when programmatic activity calls for coordination.

Other Great Lakes strategies address unique environmental problems or specific geographical areas. For example, a strategy for each lake addresses the open lake waters through Lakewide Management Plans (LaMP), which EPA is responsible for developing. Toward this end, EPA formed working groups for each lake to identify and address restoration activities. For example, the LaMP for Lake Michigan, issued in 2002, includes a summary of the lake's ecosystem status and addresses progress in achieving the goals described in the previous plan, with examples of significant activities completed and other relevant topics. However, EPA has not used the LaMPs to assess the overall health of the ecosystem.

The Binational Executive Committee for the United States and Canada issued its Great Lakes Binational Toxics Strategy in 1997 that established a collaborative process by which EPA and Environment Canada, in consultation with other federal departments and agencies, states, tribes and the province of Ontario work toward the virtual elimination of persistent toxic substances in the Great Lakes. The strategy was designed to address particular substances that bioaccumulate in fish or animals and pose a human health risk.

Michigan developed a strategy for environmental cleanup called the Clean Michigan Initiative. This initiative provides funding for a variety of environmental, parks, and redevelopment programs. It includes nine components, including Brownfields redevelopment and environmental cleanups, nonpoint source pollution control, clean water, cleanup of contaminated sediments, and pollution prevention. The initiative is funded by a \$675 million general obligation bond and, as of early 2003, most of the funds had not been distributed.

Although there are many strategies and coordination efforts ongoing, no one organization coordinates restoration efforts. We found that extensive strategizing, planning, and coordinating have not resulted in significant restoration. Thus, the ecosystem remains compromised and contaminated sediments in the lakes produce health problems, as reported by the IJC.²

In addition to the absence of a coordinating agency, federal and state officials cited a lack of funding commitments as a principal barrier that impedes restoration progress. Inadequate funding has also contributed to the failure to restore and protect the Great Lakes, according to the IJC biennial report on Great Lakes water quality issued in July 2000.³ The IJC restated this position in a 2002 report, concluding that any progress to restore the Great Lakes would continue at a slow incremental pace without increased funding.⁴ In its 1993 biennial report, the IJC concluded that remediation of contaminated areas could not be accomplished unless government officials came to grips with the magnitude of cleanup costs and started the process of securing the necessary resources.⁵ Despite this warning, however, as we reported in 2002, EPA reduced the funding available for ensuring the cleanup of contaminated areas under the assumption that the states would fill the funding void. States, however, did not increase their funding, and restoration progress slowed or stopped altogether.⁶ Officials for 24 of 33 federal programs and for 3 of 17 state programs reported insufficient funding for federal and state Great Lakes specific programs.

²See IJC, *Tenth Biennial Report on Great Lakes Water Quality* (June 29, 2000).

³See IJC *Tenth Biennial Report on Great Lakes Water Quality* (June 29, 2000).

⁴See IJC, *Eleventh Biennial Report on Great Lakes Water Quality* (Sept. 12, 2002).

⁵See IJC, *Seventh Biennial Report on Great Lakes Water Quality* (Dec. 15, 1993).

⁶See [GAO-02-563](#).

The ultimate responsibility for coordinating Great Lakes restoration programs rests with GLNPO; however, GLNPO has not fully exercised this authority. Other organizations or committees have been formed to assume coordination and strategy development roles. The Clean Water Act provides GLNPO with the authority to fulfill the responsibilities of the U.S. under the GLWQA. Specifically, the act directs EPA to coordinate the actions of EPA's headquarters and regional offices aimed at improving Great Lakes water quality. It also provides GLNPO authority to coordinate EPA's actions with the actions of other federal agencies and state and local authorities for obtaining input in developing water quality strategies and obtaining support in achieving the objectives of the GLWQA. The act also provides that the EPA Administrator shall ensure that GLNPO enters into agreements with the various organizational elements of the agency engaged in Great Lakes activities and with appropriate state agencies. The agreements should specifically delineate the duties and responsibilities, time periods for carrying out duties, and resources committed to these duties. GLNPO officials stated that they do not enter into formal agreements with other EPA offices but rather fulfill their responsibilities under the act by having federal agencies and state officials agree to the restoration activities contained in the Great Lakes Strategy 2002. However, the strategy does not represent formal agreements to conduct specific duties and responsibilities with committed resources. EPA's Office of Inspector General reported the absence of these agreements in September 1999.⁷ The report stated that GLNPO did not have agreements as required by the act and recommended that such agreements be made to improve working relationships and coordination.

To improve coordination of Great Lakes activities and ensure that federal dollars are effectively spent, we recommended that the Administrator, EPA, ensure that GLNPO fulfills its responsibility for coordinating programs within the Great Lakes Basin; charge GLNPO with developing, in consultation with the governors of the Great Lakes states, federal agencies, and other organizations, an overarching strategy that clearly defines the roles and responsibilities for coordinating and prioritizing funding for projects; and submit a time-phased funding requirement proposal to the Congress necessary to implement the strategy.

⁷See U.S. Environmental Protection Agency, *EPA's Great Lakes Program*, EPA/OIG Rept. 99P00212 (Washington, D.C.: Sept. 1, 1999).

The Lack of an Effective Monitoring System Makes it Impossible to Assess Overall Restoration Progress

The Great Lakes Water Quality Agreement, as amended in 1987, calls for establishing a monitoring system to measure restoration progress and assess the degree to which the United States and Canada are complying with the goals and objectives of the agreement. However, implementation of this provision has not progressed to the point that overall restoration progress can be measured or determined based on quantitative information. Recent assessments of overall progress, which rely on a mix of quantitative data and subjective judgments, do not provide an adequate basis for making an overall assessment. The current assessment process has emerged from a series of biennial State of the Lakes Ecosystem Conferences (SOLEC)⁸ initiated in 1994 for developing indicators agreed upon by conference participants.

Prior to the 1987 amendments to the GLWQA, the 1978 agreement between the two countries also contained a requirement for surveillance and monitoring and for the development of a Great Lakes International Surveillance Plan. The IJC Water Quality Board was involved in managing and developing the program until the 1987 amendments gave this responsibility to the United States and Canada. This change resulted in a significant reduction in the two countries' support for surveillance and monitoring. In fact, the organizational structure to implement the surveillance plan was abandoned in 1990, leaving only one initiative in place—the International Atmospheric Deposition Network (IADN), which involved a network of 15 air-monitoring stations located throughout the basin.

With the surveillance and monitoring efforts languishing, IJC established the Indicators for Evaluation Task Force in 1993 to identify the appropriate framework to evaluate progress in the Great Lakes. In 1996, the task force proposed that nine desired measurements and outcomes be used to develop indicators for measuring progress in the Great Lakes.

Shortly before the task force began its work, the United States and Canada had agreed to hold conferences every 2 years to assess the environmental conditions in the Great Lakes in order to develop binational reports on environmental conditions to measure progress under the agreement. Besides assessing environmental conditions, the conferences were focused on achieving three other objectives, including providing a forum for communication and networking among stakeholders. Conference

⁸SOLEC is co-chaired by representatives from the U.S. EPA and Environment Canada.

participants included U.S. and Canadian representatives from federal, state, provincial, and tribal agencies, as well as from other organizations with environmental restoration or pollution prevention interests in the Great Lakes Basin. The 1994 SOLEC conference culminated in a “State of the Great Lakes 1995” report, which provided an overview of the Great Lakes ecosystem at the end of 1994 and concluded that overall the aquatic community health was mixed or improving. This same assessment was echoed in the 1997 state of the lakes report. Meanwhile the IJC agreed that the nine desired outcome areas recommended by the task force would help assess overall progress. It recommended that SOLEC, during the conference in 2000, establish environmental indicators that would allow the IJC to evaluate what had been accomplished and what needed to be done for three of the nine indicators—the public’s ability to eat the fish, drink the water, and swim in the water without any restrictions.

However, the indicators developed through the SOLEC process and the accomplishments reported by federal and state program managers do not provide an adequate basis for making an overall assessment for Great Lakes restoration progress. The SOLEC process is ongoing, and the indicators that are still being developed are not generally supported by sufficient underlying data for making progress assessments. The number of indicators considered during the SOLEC conferences has been pared down from more than 850 indicators in 1998 to 80 indicators in 2000, although data was available for only 33 of them.

After the SOLEC 2000 conference, IJC staff assessed the indicators supported by data that measured the desired outcomes of swimmability, drinkability, and the edibility of fish in the Great Lakes.⁹ Overall, the IJC commended SOLEC’s quick response that brought together information regarding the outcomes and SOLEC’s ongoing efforts. The IJC, however, recognized that sufficient data were not being collected throughout the Great Lakes Basin and that the methods of collection, the data collection time frames, the lack of uniform protocols, and the incompatible nature of some data jeopardized their use as indicators. Specifically, for the desired outcome of swimmability, the IJC concurred that it was not always safe to swim at certain beaches but noted that progress for this desired outcome was limited because beaches were sampled by local jurisdictions without uniform sampling or reporting methods. At the 2002 SOLEC conference, the number of indicators assessed by conference participants increased

⁹See IJC, *Eleventh Biennial Report on Great Lakes Water Quality* (Sept. 12, 2002).

from 33 to 45. The IJC expressed concern that there are too many indicators, insufficient supporting backup data, and a lack of commitment and funding from EPA to implement and make operational the agreed upon SOLEC baseline data collection and monitoring techniques. The IJC recommended in its last biennial report that any new indicators should be developed only where resources are sufficient to access scientifically valid and reliable information.

The ultimate successful development and assessment of indicators for the Great Lakes through the SOLEC process are uncertain because insufficient resources have been committed to the process, no plan provides completion dates for indicator development and implementation, and no entity is coordinating the data collection. Even though the SOLEC process has successfully engaged a wide range of binational parties in developing indicators, the resources devoted to this process are largely provided on a voluntary basis without firm commitments to continue in the future. GLNPO officials described the SOLEC process as a professional, collaborative process dependent on the voluntary participation of officials from federal and state agencies, academic institutions, and other organizations attending SOLEC and developing information on specific indicators. Because SOLEC is a voluntary process, the indicator data resides in a diverse number of sources with limited control by SOLEC organizers. GLNPO officials stated that EPA has neither the authority nor the responsibility to direct the data collection activities of federal, state, and local agencies as they relate to the surveillance and monitoring of technical data elements that are needed to develop, implement, and assess Great Lakes environmental indicators. Efforts are underway for the various federal and state agencies to take ownership for collecting and reporting data outputs from their respective areas of responsibility and for SOLEC to be sustained and implemented; each indicator must have a sponsor. However, any breakdown in submitting this information would leave a gap in the SOLEC indicator process.

EPA supports the development of environmental indicators as evidenced by the fact that, since 1994, GLNPO has provided about \$100,000 annually to sponsor the SOLEC conferences. Additionally, GLNPO spends over \$4 million per year to collect surveillance data for its open-lake water quality monitoring program, which also provides supporting data for some of the indicators addressed by SOLEC. A significant portion of these funds, however, supports the operation of GLNPO's research vessel, the Lake Guardian, an offshore supply vessel converted for use as a research vessel. GLNPO also supports activities that are linked or otherwise feed information into the SOLEC process, including the following:

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- collecting information on plankton and benthic communities in the Great Lakes for open water indicator development;
 - sampling various chemicals in the open-lake waters, such as phosphorus for the total phosphorus indicator;
 - monitoring fish contaminants in the open waters, directly supporting the indicator for contaminants in whole fish and a separate monitoring effort for contaminants in popular sport fish species that supports the indicator for chemical contaminants in edible fish tissue; and
 - operating 15 air-monitoring stations with Environment Canada comprising the IADN that provides information for establishing trends in concentrations of certain chemicals and loadings of chemicals into the lakes. EPA uses information from the network to take actions to control the chemicals and track progress toward environmental goals.

In November 2001, EPA committed to an agencywide initiative to develop environmental indicators for addressing the agency's nationwide environmental conditions, stating that "indicators help measure the state of our air, water and land resources and the pressures placed on them, and the resulting effects on ecological and human health." However, this initiative does not specifically relate to the Great Lakes. The short-term goal for this initiative is to develop information that will indicate current nationwide environmental conditions and to help EPA make sound decisions on what needs to be done. The long-term goal is to bring together national, regional, state, and tribal indicator efforts to describe the condition of critical environmental areas and human health concerns.

Program officials frequently cite output data as measures of success rather than actual program accomplishments in improving environmental conditions in the basin. As a rule, program output data describe activities, such as projects funded, and are of limited value in determining environmental progress. For example, in reporting the accomplishments for Michigan's Great Lakes Protection Fund, officials noted that the program had funded 125 research projects over an 11-year period and publicized its project results at an annual forum and on a Web site. Similarly, the Lake Ontario Atlantic Salmon Reintroduction Program administered by the U.S. Department of the Interior's Fish and Wildlife Service listed under its accomplishments the completion of a pilot study and technical assistance provided to a Native American tribe.

Of the 50 federal and state programs created specifically to address conditions in the basin, 27 reported accomplishments in terms of outputs, such as reports or studies prepared or presentations made to groups. Because research and capacity building programs largely support other activities, it is particularly difficult to relate reported program accomplishments to outcomes. The federal and state environmental program officials who responded to our evaluation generally provided output data or, as reported for 15 programs, reported that the accomplishments had not been measured for the programs.

Only eight of the federal or state Great Lakes specific programs reported outcome information, much of which generally described how effective the programs' activities or actions had been in improving environmental conditions. For example, EPA's Region II program for reducing toxic chemical inputs into the Niagara River, which connects Lake Erie to Lake Ontario, reported reductions in priority toxics from 1986 through 2002 from ambient water quality monitoring. Other significant outcomes reported as accomplishments for the Great Lakes included (1) reducing phosphorus loadings by waste treatment plants and limiting phosphorus use in household detergents; (2) prohibiting the release of some toxicants into the Great Lakes, and reducing to an acceptable level the amount of some other toxicants that could be input; (3) effectively reducing the sea lamprey population in several invasive species-infested watersheds; and (4) restocking the fish-depleted populations in some watersheds.

To fulfill the need for a monitoring system called for in the GLWQA and to ensure that the limited funds available are optimally spent, we recommended that the Administrator, EPA, in coordination with Canadian officials and as part of an overarching Great Lakes strategy, (1) develop environmental indicators and a monitoring system for the Great Lakes Basin that can be used to measure overall restoration progress and (2) require that these indicators be used to evaluate, prioritize, and make funding decisions on the merits of alternative restoration projects.

Mr. Chairman, this completes my prepared statement. I would be happy to answer any questions that you or other members of the Subcommittee may have at this time.

For further information, please contact John B. Stephenson at (202) 512-3841. Individuals making key contributions to this testimony were Willie Bailey, Karen Keegan, Rosemary Torres-Lerma, Jonathan McMurray, Margaret Reese, and John Wanska.

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